Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Little Lindley Creek

Waterbody Segment at a Glance:

County: Dallas
Nearby Cities: Buffalo
Length of impairment: 1 mile
Pollutants: Biological Oxygen Demand (BOD)
Volatile Suspended Solids (VSS)
Source: Buffalo Wastewater Treatment Plant


State map showing location of watershed

TMDL Priority Ranking: High

Description of the Problem

Beneficial uses of Little Lindley Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- The Missouri Water Quality Standard (WQS), found in 10 CSR 20-7.031 Table A, for dissolved oxygen (related to Biochemical Oxygen Demand) in streams is 5.0 mg/L (milligrams per liter or parts per million).
- Standards for Volatile Suspended Solids may be found in the general criteria section of the WQS, 10 CSR 20-7.031(3)(A) and (C) where it states:
  - Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
  - Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

Background Information and Water Quality Data

Any waterbody that was listed for Non-Filterable Residue (NFR) in 1998, like Little Lindley Creek, is now being listed as Volatile Suspended Solids (VSS). This change was made to better distinguish

between organic solids coming from wastewater treatment plants (VSS) and mineral solids (soil or mineral particles) coming from soil erosion or erosion of mine waste materials or stockpiles (Non-Volatile Suspended Solids or NVSS).

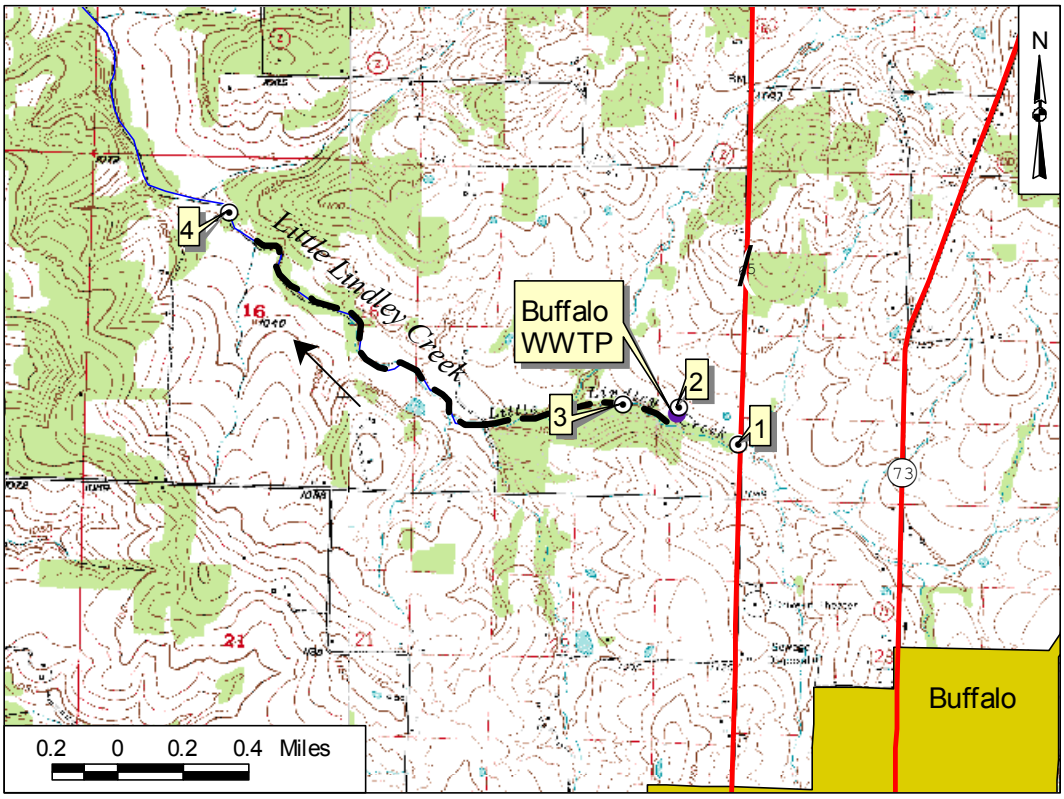
Little Lindley Creek shows reduced diversity of aquatic invertebrates downstream from the Buffalo wastewater treatment plant (WWTP). That means there are not as many different kinds of aquatic invertebrates (like water insects and crayfish) as there used to be. Most aquatic organisms require high levels of oxygen to survive and wastewater high in Biochemical Oxygen Demand (BOD) reduces the amount of dissolved oxygen in the stream's water. In addition, VSS can settle onto the bottom of a stream smothering natural substrates (materials in the streambed), aquatic invertebrate animals and fish eggs. Like all wastewater discharges in Missouri, the Buffalo WWTP has to meet the requirements of a discharge permit issued by Missouri Department of Natural Resources. The department conducted water quality and aquatic invertebrate studies of Little Lindley in 2003. These studies showed that, while the creek is meeting water quality standards, there is still reduced diversity of aquatic invertebrates. They also showed a large increase in nitrogen and phosphorus in Little Lindley downstream of the WWTP. These high levels of nutrients may encourage algae growths that may be responsible for the impairment of the aquatic community in this creek. The permit will be revised to add in-stream monitoring and will be submitted as a permit-in-lieu-of a TMDL.

Mean (Average) Data from Little Lindley Creek Water Quality Studies, July and September 2003

Site #	Site Description	DO	TSS	VSS	CBOD	N03 as N	T Phos
1	Little Lindley Creek 0.2 mile above WWTP	4.7	5.8	2.9	0.99	0.047	0.057
2	Buffalo WWTP	5.1	4.7	3.3	1.82	40.87	5.97
3	Little Lindley Creek 0.1 mile below WWTP	5.6	10.3	4.2	0.99	36.82	5.27
4	Little Lindley Creek 1.8 miles below WWTP	8.5	3.1	2.8	0.99	22.79	2.85
Off Map	Little Lindley Creek 3.1 miles below WWTP	7.5	4.9	2.5	0.99	13.26	1.33

There is a map of Little Lindley Creek with site locations on the next page.

Little Lindley Creek in Dallas County, Missouri, with Sampling Sites



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